



US009558357B2

(12) **United States Patent**
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(10) **Patent No.:** **US 9,558,357 B2**

(45) **Date of Patent:** **Jan. 31, 2017**

(54) **DELEGATION OF ACCESS RIGHTS TO AN ACCOUNT AFTER THE DISAPPEARANCE OF THE USER**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **13/946,606**

(22) Filed: **Jul. 19, 2013**

(65) **Prior Publication Data**
US 2014/0026229 A1 Jan. 23, 2014

(30) **Foreign Application Priority Data**
Jul. 20, 2012 (FR) 12 57081

(51) **Int. Cl.**
G06F 21/60 (2013.01)
G06F 21/62 (2013.01)

(52) **U.S. Cl.**
CPC **G06F 21/60** (2013.01); **G06F 21/604** (2013.01); **G06F 21/6218** (2013.01)

(58) **Field of Classification Search**
CPC G06F 21/32; G06F 21/50; G06F 21/604; G06F 21/62; G06F 21/60; G06F 21/6218
USPC 726/28
See application file for complete search history.

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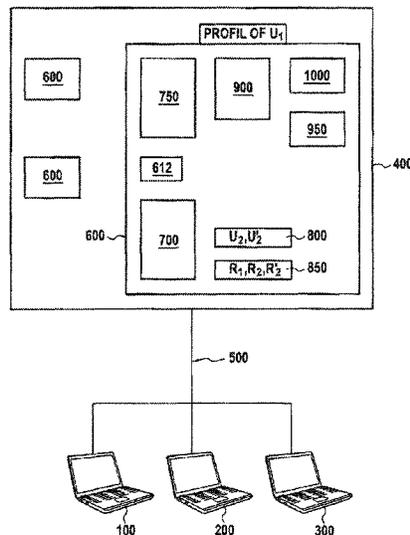
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(57) **ABSTRACT**

A management process for access to secure data includes: storing secure data associated with a first user and authentication data of said first user, managing access to the secure data of the first user, as a function of the authentication data of this first user. The process includes: storing, in the secure data of the first user, a heritage rule and a list of at least one second user and, for each second user of said list, an rule for access to secure data of the first user, storing authentication data for each second user of said list, and when the heritage rule is satisfied, managing access, by said at least one second user, to the secure data of the first user, as a function of the authentication data of the second user and of the rule for access of the second user.

10 Claims, 3 Drawing Sheets



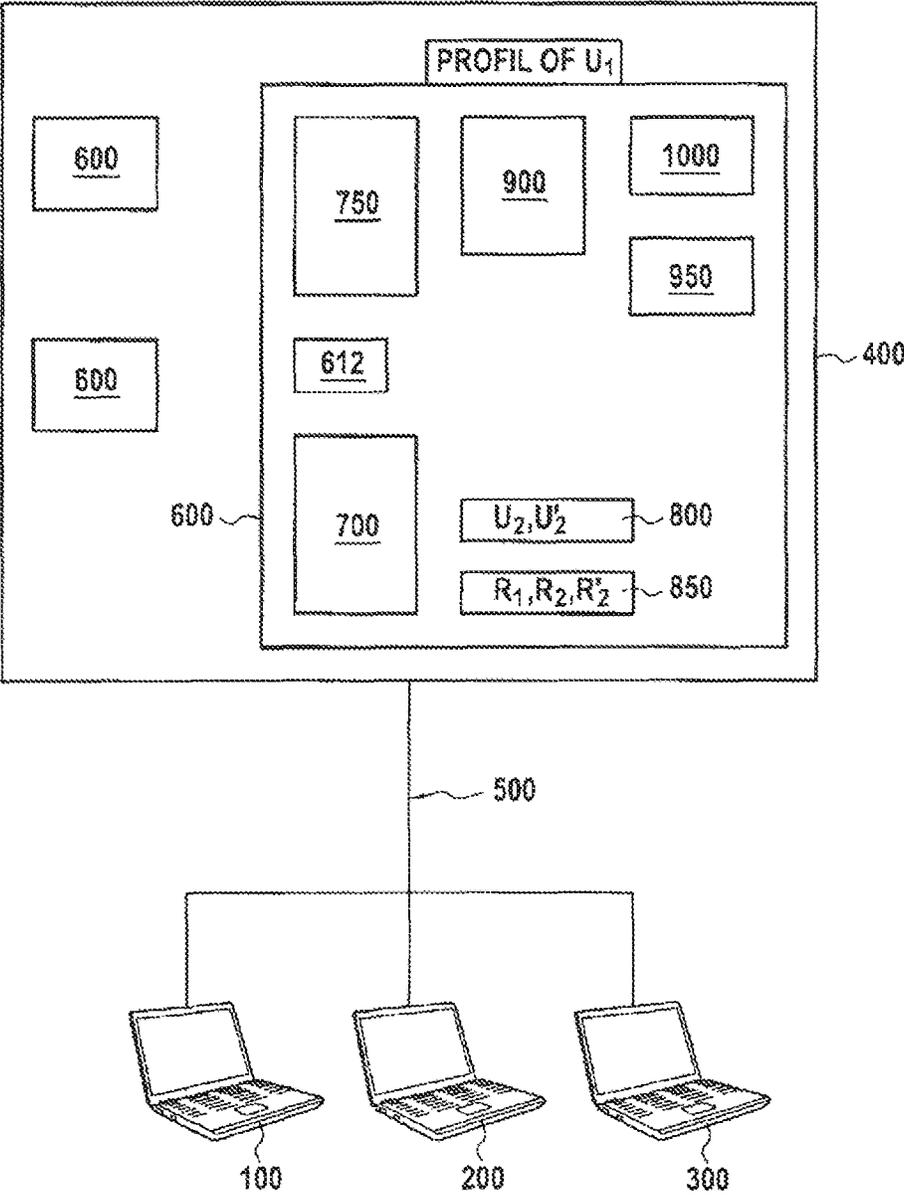


FIG.1

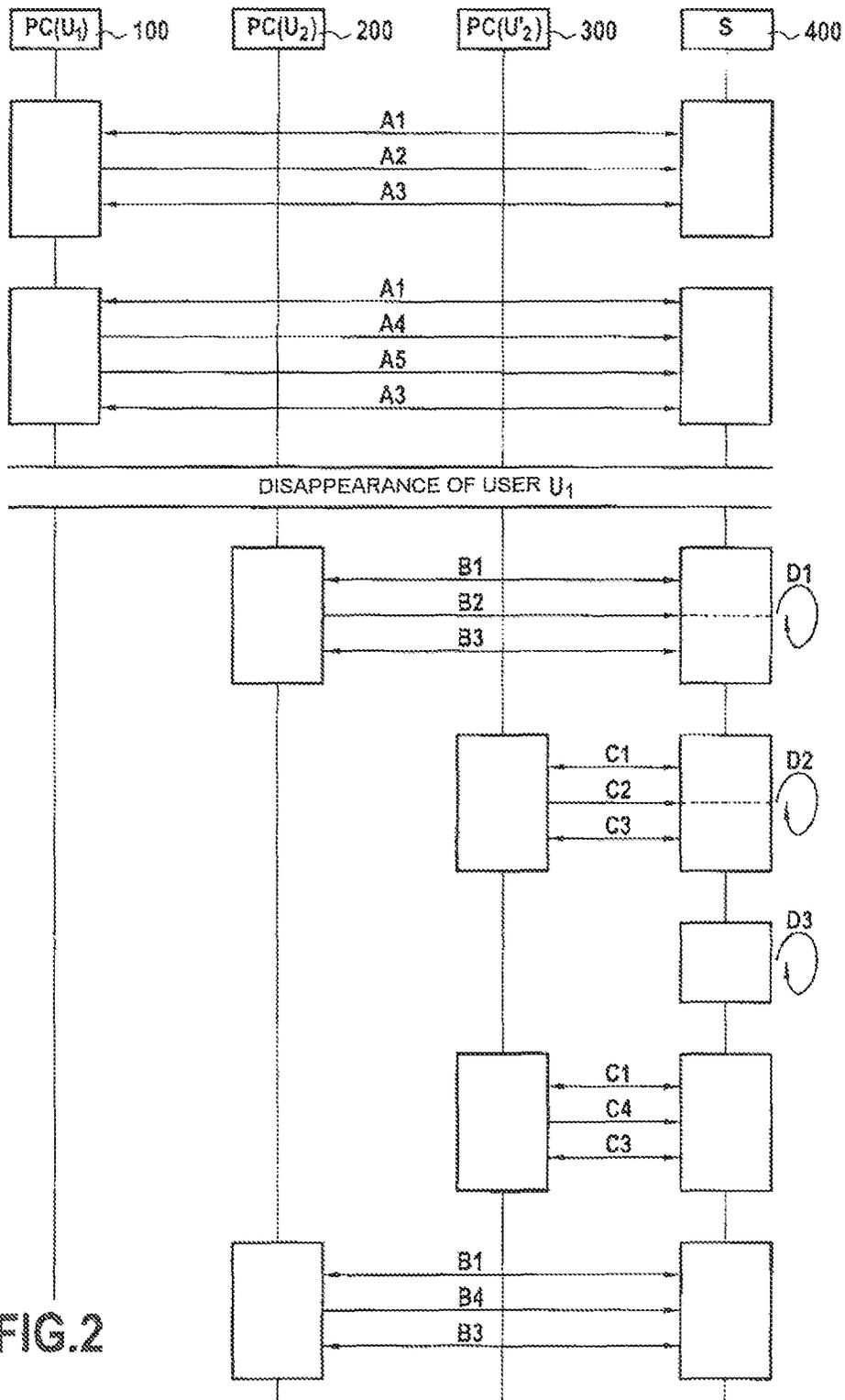


FIG.2

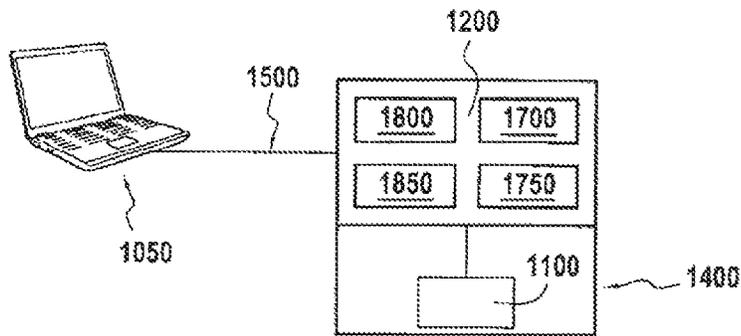


FIG.3

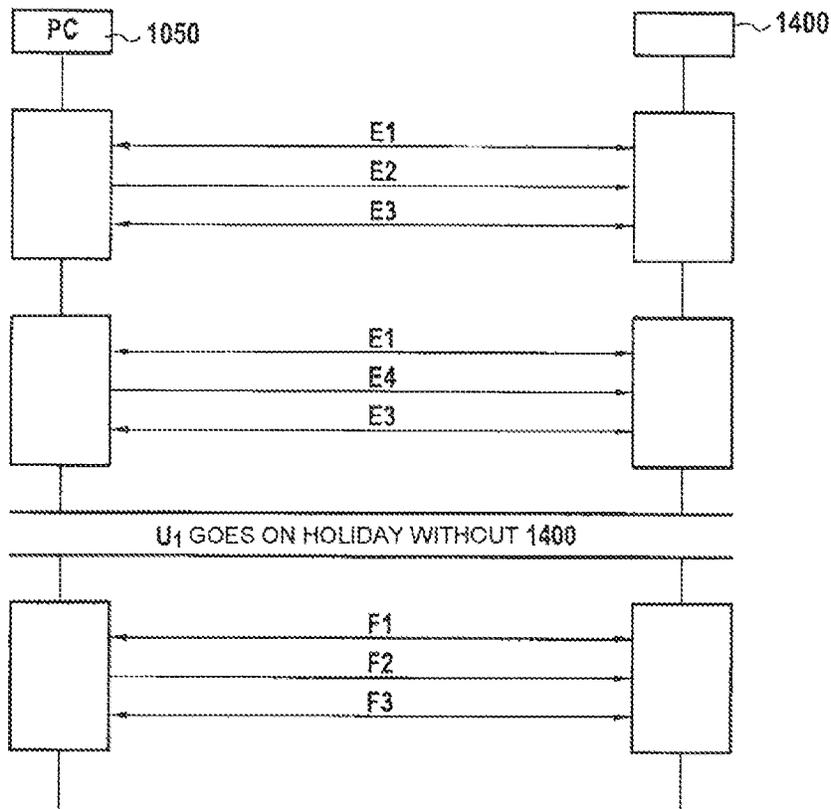


FIG.4

DELEGATION OF ACCESS RIGHTS TO AN ACCOUNT AFTER THE DISAPPEARANCE OF THE USER

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority to French patent application 1257081 filed Jul. 20, 2012, the entire disclosure of which is hereby incorporated herein by reference in its entirety.

BACKGROUND OF THE INVENTION

The present invention relates to the field of management of access to secure data especially in the case of disappearance of the owner of these data.

Locasto (*Security and Privacy Considerations in Digital Death*, 2011) describes a solution for centralisation of data linked to a user on a specific server, the access conditions, to this server in case of disappearance of the owner of the data being transmitted to the provider or manager of this server.

And, document WO2007/10427 describes a solution aiming to favour the heritage of data of a disappeared user, the heritage being conditioned by a heritage licence and access to a death certificate.

However, according to the two solutions proposed for having access to the data of a user who might have disappeared, it is necessary to contact a third party (manager of the server for Locasto (2011), and notary or administration for supplying a death certificate in document WO2007/10427).

Several social networks, including Facebook, propose to close family of a disappeared user specifying that his account be transformed into a commemoration account.

However, the structure of the commemoration account is such that the data of the disappeared user are frozen. It is therefore not possible to administer or control them.

There is therefore a need to improve existing access management solutions to provide for each heir defined by the owner of the secure data personalised access to the data of the disappeared user, via an existing interface and without having to go through an intermediate.

SUBJECT MATTER AND SUMMARY OF THE INVENTION

The aim of the present invention is mainly to resolve the above drawbacks.

For this reason, the invention relates to a management process for access to secure data, executed by at least one management device for access, the process comprising:

- a storage step for secure data associated with a first user and his authentication data,
- a management step for access to the secure data of the first user, as function of his authentication data,
- a storage step, in the secure data of the first user, of a heritage rule, and a list of at least one second user and, for each second user of the list, a rule for access to secure data of the first user,
- a storage step of authentication data for each second user of the list, and
- when the heritage rule is satisfied, a management step for access by the at least one second user to the secure data

of the first user as a function of the authentication data of the second user and of the rule for access of the second user.

In general, the existence of a heritage rule prevents second users from keeping a specific password for inheriting data of the first user.

The heritage rule can define a period during which it can be satisfied (ex: during holidays of the first user).

The heritage rule can define a condition verified only if a single heir is authenticated, or if each heir of a predetermined group is authenticated.

The heritage rule allows a second user to access the data of a first disappeared user without going through a third party.

In a particular embodiment of the invention, the process also comprises a storage step of a plurality of user profiles, each user profile including:

- secure data associated with the user, these secure data including:
 - personal data of the user,
 - a heritage rule,
 - a list of at least one other user, and

for each other user of the list, a rule for access, which defines a set of data among the secure data of the user to which the other user can have access, and authentication data of the user, in which the secure data of the first user are the secure data of the user profile of the first user and the authentication data of the second user are the authentication data of the user profile of the second user.

The advantage of this embodiment is that it allows a second user to access the data of a first disappeared user without having to go through another interface, where in effect the second user gains access via his normal profile.

The process can also comprise a receiving step of a heritage request of the first user, sent by the second user. The heritage rule of the first user is not satisfied if any heritage request of the first user has been received, the heritage rule able to be satisfied if at least one heritage request has been received.

This heritage request allows the first user to be warned of the tentative access to his secure data by a second user, and if the first user disappears, to satisfy a heritage condition to access the secure data of the disappeared user.

The heritage rule can be satisfied if for example at least two heritage requests have been received from two second different users.

Each user profile can also comprise a heritage indicator initialised at a first value, the process comprising a step for changing the heritage indicator of the first user to a second value during access, by the at least one second user, to the secure data of the first user, the process further comprising a sending step of an heir absence notification when, given the heritage indicator of the second user, the heritage rule of the first user cannot be satisfied.

The notification allows the first user to define a new heritage rule and/or select at least one new second user.

In another embodiment of the invention, the authentication data of the first user and the authentication data of the second user comprise at least one biometric datum.

The biometric sensor can for example be a digital footprint sensor, or even an iris analyser.

A management device for access in terms of the invention can be a portable terminal belonging to the first user and including a biometric data sensor.

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The heritage rule can be based on motion capture (accelerometer, GPS) such that if the portable terminal does not move for a predetermined period, the heritage rule is satisfied.

The heritage can also be based on biometric data such as DNA for verifying the family tie between the first user and a second user.

In general, the invention can comprise a sending step of notification to the first user during access of the second user to the secure data of the first user.

This notification sending step allows the first user to be informed of the fact that a second user is attempting to access his secure data.

The heritage rule cannot be satisfied when the elapsed period from the most recent access, by the first user, to his secure data is less than a predetermined period, and vice versa, the heritage rule can be satisfied when the elapsed period is greater than the predetermined period.

The heritage rule cannot be satisfied when an access number, by the first user, to his secure data during a predetermined period is greater than a predetermined threshold, and vice versa, the heritage rule can be satisfied when the access number is less than the predetermined threshold.

In a particular embodiment of the invention, the rule for access defines a set of secure data of the first user to which the second user can have access.

In this case, the rule for access allows the first user to personalise access to his data according to the second user. The list stored in the secure data of the first user can contain at least two second users, and at least two of these second users can have rule for access defining different sets.

As a variant, all the second users can have access to the same set of secure data of the first user.

The management step for access, by the at least one second user, to the secure data of the first user can comprise reading access management only.

Otherwise, the management step for access, by the at least one second user to the secure data of the first user can comprise management of both reading and writing access.

The rule for access of a second user can define a first set of data among the secure data of the first user to which the second user can have reading access only, and a second set of data among the secure data of the first user to which the second user can have reading and writing access.

The invention also relates to a management device for access to secure data, the device comprising:

storage means of secure data associated with a first user and his authentication data,

management means of access to secure data of the first user, as a function of his authentication data,

storage means, in the secure data of the first user, of a heritage rule, a list of at least one second user and, for each second user of the list, an access rule, the rule for access defining a set of data among the first secure data to which the second user can have access,

storage means of authentication data for each second user of the list, and

management means for access, by the at least one second user, to the secure data of the first user, as a function of the authentication data of the second user and of the rule for access of the second user, these management means for access being triggered when the heritage rule is verified.

In a particular embodiment of the invention, the management device for access can be a network server. In this case, the server can store the user profiles.

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In another embodiment of the invention, the management device for access can be a portable terminal, for example a mobile phone or touch tablet.

The portable terminal can comprise a biometric sensor.

BRIEF DESCRIPTION OF THE DIAGRAMS

Other characteristics and advantages of the present invention will emerge from the following description in reference to the attached diagrams which illustrate an embodiment devoid of any limiting character, in which:

FIG. 1 schematically illustrates a server hosting a social network, according to a first embodiment of the invention, in its environment;

FIG. 2 illustrates in organigram form the main steps of a management process for access to secure data executed by the server of FIG. 1;

FIG. 3 schematically illustrates a terminal and a management device for access to secure data, according to a second embodiment;

FIG. 4 illustrates in organigram form the main steps of a management process for access to secure data executed by the management device for access to the secure data of FIG. 3.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 shows, in its environment, a server **400** hosting an online service of social network type. The server **400** is an example of a management device for access to secure data according to an embodiment.

The server stores a plurality of profiles **600** corresponding to the users of the social network. Only three profiles **600** are shown in this figure but the server **400** can of course contain more.

The server **400** is connected by means of a telecommunications network **500** to several terminal **100**, **200**, **300** allowing users to access the online service. In this example, these terminals are computers.

Each profile **600** hosted on the server **400** corresponds to a user and especially comprises authentication data **700** of the user, personal data **750**, a list of heirs **800**, a set of rules **850** including a heritage rule and, for each heir of the list of heirs **800**, an access rule, a list of contacts **900**, a status indicator **610**, an update space **950**, and a list of donors **1000**.

The authentication data **700** comprise for example an identifier and a password. The identifier and the password can be selected by the user as he logs on to the server **400** and creates his profile **600**. The password can optionally be modified later.

The status indicator **610** is a variable which can take an <<active>> value and an <<inactive>> value. During creation of the profile of a user, the status indicator **610** is initialised at the <<in activity>> value.

The personal data **750** include for example personal information such as age, marital status, etc. of the user, photos, exchanged messages,

The list of contacts **900** is a list of other users of the social network, also having profiles **600**, with which the user is in contact. The list of contacts **900** is especially used by the server **400** for generating the update space **950** as a function of events occurring in the profiles **600** of the contacts of a user.

The heir list **800** is a list of other users of the social network, also having profiles **600**, which the user has

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designated as heirs so that they can execute some actions on his profile **600**, in conditions defined by the set of rules **850**.

In fact, in a normal use situation of the social network service by a user **U1**, the personal data **750**, the list of heirs **800**, the set of rules **850**, the status indicator **610**, and the list of donors **1000** of the profile **600** of user **U1** constitute secure data of user **U1**, meaning that only user **U1** can have reading and writing access, after being authenticated with of the server **400** with his authentication data **700**. However, user **U1** may want to give access to his secure data to one or more heirs, for example in the event of disappearance or absence of user **U1**.

Therefore, the heritage rule is a rule which defines the conditions to be complied with so that the server **400** gives access to the secure data of a user **U1** to his or her heirs, and for each heir the access rules define to what extent the heir can access the secure data of user **U1**.

The heritage rule can for example define a period during which the server **400** gives access to the secure data of a user **U1** to his or her heirs. For example, this period can correspond to the holidays of the first user **U1**.

The heritage rule can also define an authentication obligation of a single heir, or else of each of the heirs of a predetermined group.

As a variant, the heritage rule can define minimal connection frequency of the first user **U1**, below which the rule is verified. It can also be a condition on the elapsed period from the most recent connection of the first user **U1**.

These examples of heritage rule can be combined or used separately.

The rule for access can define a first set of data among the secure data of the first user **U1** to which the second user can have access, or else access can refer to all the secure data of **U1**.

As a variant, all the second users can have access to the same set of secure data of **U1**.

As a variant, the rule for access can define a reading and/or writing access to the secure data of **U1**.

Finally, two users **U2** and **U2'** can have rules for access relating to different sets and/or to reading access for **U2** and reading writing access for **U2'**.

These examples of the access rule can be combined or used separately.

Finally, the donor list **1000** is a list, of other users of the social network, for which the user is an heir.

The operation of the server **400** will now be described, in reference to FIG. 2.

In FIG. 2, users **U1**, **U2**, **U2'** access the server **400** by means of terminal **100**, **200**, **300**. The server **400** stores a plurality of profiles **600** of users, in particular those of users **U1**, **U2** and **U2'**.

In this example, the terminals are computers, but they can also be portable terminals such as mobile phones, or touch tablets, etc.

A scenario for execution of the process according to an embodiment of the invention by the server **400** will now be described.

It is supposed that the first user **U1** has already logged on to the server **400** and created his profile **600**, but that initially his list of heirs **800** and his set of rules **850** are empty. The first user **U1** wants to designate users **U2** and **U2'** as heirs and define the corresponding rules.

So, the first user **U1** is authenticated on the server **400** by using his authentication data **700** (step **A1**) via his computer **100** so as to access his profile **600**. During a step **A2**, **U1** designates users **U2** and **U2'** as heirs and defines a heritage rule **R1** as well as two access rules **R2** and **R2'** respectively

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associated with users **U2** and **U2'**. For example, user **U1** selects users **U2** and **U2'** from his list of contacts **900** to designate as heirs, and parameters models of predefined rules proposed by the server.

The server **400** then stores:
users **U2** and **U2'** in the list of heirs **800** of the profile **600** of user **U1**,
the rules defined in the set of rules **850** of the profile **600** of user **U1**, and
user **U1** in the list of donors **1000** of profiles **600** of users **U2** and **U2'**.

In this example, the rules are defined by **U1** when he accesses his profile, as follows:

the heritage rule **R1** is defined such that it is satisfied when users **U2** and **U2'** have both sent a heritage request;
the rule for access **R2** authorises reading and writing access to the set of secure data of user **U1**;
the rule for access **R2'** authorises reading and writing access to a sub-set of secure data of **U1** comprising only the status indicator **610**.

Next, user **U1** logs off (step **A3**) from his profile.

During another session, user **U1** is authenticated (step **A1**) on the server **400** via his computer **100** then consults a profile during a step **A4** and uploads a photo to his secure data during a step **A5**. He terminates the session by logging off during a step **A3**.

The two first sessions described to date relate to standard use of the social network service run by the server by user **U1** via his computer **100**.

Some time later, user **U1** disappears. The following explanation is how users **U2** and **U2'** designated by **U1** prior to his disappearance can access the secure data of **U1** without knowing the authentication data **700** of **U1**.

User **U2** is authenticated (step **B1**) by using the authentication data **700** of his profile on the server **400** via his computer **200** to access his profile **600**. To signal the disappearance of user **U1**, user **U2** sends (step **B2**) a heritage request to the server **400**. The server **400** notifies (step **D1**) user **U1** of this request by sending an alert to the profile of user **U1**.

Beyond this example, the notification can also take other forms. For example, the server can send a message (SMS or email, for example) to the attention of user **U1** to warn him immediately of the request, such that **U1** does not have to log on to his profile to see the alert.

The server could also respond by asking **U2'** (or other second users) to send a heritage request so that the heritage rule is verified.

Next, user **U2** terminates the session by logging off (step **B3**) from the server.

Similarly, user **U2'** is authenticated by using the authentication data **700** from his profile **600** on the server **400** during a step **C1** via his computer **300**, then sends the server a heritage request (step **C2**), the server **400** then sends a notification (step **D2**) to user **U1** and **U2'** logs off in step **C3**.

The heritage rule **R1** is satisfied. In fact, users **U2** and **U2'** have both sent a heritage request.

Access by users **U2** and **U2'** to the secure data of **U1** is therefore opened during a step **D3**.

User **U2'** is authenticated with the authentication data **700** from his profile **600** during a step **C1**, then changes the status indicator **610** of the profile of user **U1** from <<active>> to <<inactive>> during a step **C1**. This modification is accepted by the server **400** in terms of access rights offered by the rule **R2'**. User **U2'** then logs off during a step **C3**.

As a variant, the server **400** can automatically change the status indicator **610** of user **U1** when the heritage rule **R1** is satisfied.

User **U2** is authenticated during a step **B1**, then sends a message to the contacts of user **U1** during a step **B4**. This modification is accepted by the server **400** in terms of access rights offered by the rule **R2**. User **U2** then logs off during a step **B3**.

In this scenario, the server **400** accepts or refuses the actions of the heirs on the secure data of the disappeared user **U1**. However, management by the server of a disappeared user profile can be done differently. For example, still with the social network example, the user profile in question can be modified so that it accepts no more new contacts.

The advantage of this first embodiment is that it allows users **U2**, **U2'** to access the data of a first user **U1** who would have disappeared, without having to go through another interface, with access being made via their usual profiles, that is, by using their standard authentication data.

In an embodiment not shown, the online social network service can be run on a number of servers. For instance, the profiles of different users are stored distributed on different servers.

FIG. 3 illustrates a terminal **1050**, and another terminal **1400**, which is a management device for access to secure data according to an embodiment of the invention comprising a sensor **1100**. These two terminals are connected by a cable **1500**. The management device for access to secure data **1400** comprises a biometric sensor **1100**, a memory **1200** containing authentication data **1700**, personal data **1750**, authentication data of heirs **1800**, a set of rules **1850** including a heritage rule and, for each heir of the list of heirs **1800**, a rule for access and a processor **1200** capable of managing the authentication from biometric sensor measurement **1100** and managing the various modifications of the secure data.

The terminal **1050** can be a computer or a mobile phone or a touch tablet or any other terminal known to the expert.

The device **1400** can be any sort of terminal comprising a sensor **1100**, a memory **1200** and a processor **1200**, as is the case in FIG. 3.

As a variant, the sensor **1100** can be on the terminal **1050**.

The cable **1500** connecting the two terminals can be replaced by a telecommunications network, a wireless link or any other means for linking the two terminals.

As a variant, the process can be run on a single management device for access to secure data (**1050+1400**), for example a telephone with an integrated sensor.

In the following example the sensor is a footprint sensor, but it can also be an iris analyser or any other sensor for measuring a biological parameter.

The authentication data **1700** can contain a biometric characteristic measured by means of the sensor **1100**. For example, it can be a footprint or an iris, according to the nature of the sensor.

The personal data **1750** can be of the same type as the personal data of the first embodiment and the authentication data of the heirs **1800** are the equivalent of the authentication data **800** stored in each user profile of the first embodiment explained in FIGS. 1 and 2.

The set **1850** of heritage rules and the access rule can be of the same type as in the first embodiment (set of rules **850**), and in the event where the device **1400** is portable (mobile phone, tablet . . .) the heritage rule can also be based on a motion capture (accelerometer, GPS) such that if the portable terminal does not move for a predetermined period, the heritage rule is satisfied.

FIG. 4 illustrates the terminal **1050** and the management device for access to the secure data **1400** of FIG. 3, using a process according to a second embodiment of the invention.

A scenario for executing the process according to this second embodiment of the invention by the management device for access to secure data **1400** of FIG. 3 will now be described.

A user **U1** is authenticated (step **E1**) on the management device for access to secure data **1400** by placing his finger on the footprint digital sensor, then via the terminal **1050** he sends his emails (step **E2**) to the management device for access to secure data **1400** via a liaison **1500** which can be for example a USB cable or wireless technology such as Bluetooth, Wi-Fi, NFC, etc. He then logs off during a step **E3**. During another session, user **U1** is authenticated (step **E1**) then requests a user **U2** to place his finger on the sensor **1100** so that the management device for access to secure data **1400** can store the footprint in the memory **1200**. User **U1** then defines a heritage rule **R1** and an access rule linked to user **U2**. In this example the heritage rule **R1** is satisfied when user **U2** is authenticated and the date of this authentication corresponds to the holiday dates of **U1**, and the rule for access **R2** allows user **U2** to reading access to the secure data of user **U1**. User **U1** logs off (step **E3**).

Some time later, user **U1** GOES ON HOLIDAY and leaves the management device for access to secure data **1400** to user **U2**.

When on holiday, **U1** needs information contained in one of the emails saved in his secure data on the management device for access to secure data **1400**.

To supply him with this information, user **U2** will be authenticated (step **F1**) via the biometric sensor **1100** by placing his finger on it. Once the management device for access to secure data **1400** has recognised his footprint, user **U2** tries to access data via the computer **1050**. In keeping with the access rule defined earlier by user **U1**, user **U2** can have reading access (step **F2**) to the secure data of **U1**. He can then give the requested information to **U1** then log off dueing step **F3**.

The main advantage of this second embodiment of the invention is that the second users do not have to retain a password as the authentication data are intrinsic to their body.

As a variant, the authentication of users would have been able to be done via entering of a PIN code.

Beyond this example, the case where user **U1** disappears is also covered by the invention.

The invention claimed is:

1. A management process for accessing secure data comprising:
 - securing, by at least one access management device, data associated with a first user and authentication data of said first user;
 - accessing, by the least one access management device, the secure data of the first user, as a function of the authentication data of this first user,
 - storing, by the least one access management device, in association with the secure data of the first user:
 - a heritage rule defining conditions for giving heirs of the first user access the secure data of the first user, and
 - a list of at least one second user designating the heirs of the first user, and
 - for each second user of said list, a rule for giving access to the secure data of the first user;
 - storing, by the least one access management device, authentication data for each second user of said list;

determining, by the least one access management device, whether the heritage rule is satisfied; and accessing by the at least one second user, when the heritage rule is satisfied, the secure data of the first user as a function of the authentication data of the at least one second user and of the respective rule for giving access to the secure data of the first user,

wherein:

said heritage rule is not satisfied when the elapsed period from the most recent access, by the first user, to the secure data of the first user is less than a predetermined period, and said heritage rule is able to be satisfied when said elapsed period is greater than said predetermined period, or

said rule heritage rule is not satisfied when an access number, by the first user, to the secure data of the first user during a predetermined period is greater than a predetermined threshold, and said heritage rule being satisfied when said access number is less than said predetermined threshold, or

said heritage rule is satisfied when at least two heritage requests have been received from two different second users; and

wherein each of the rules for giving access to the secure data of the first user defines a set of the secure data of the first user to which the at least one second user can access in reading and/or writing.

2. The process of claim 1, further comprising storing a plurality of user profiles, each user profile including:

secure data associated with the user, said secure data including:

- personal data of the user, a heritage rule, a list of at least one other user, and for each other user of said list, a rule for access to secure data of the first user, and authentication data of the user,

in which said secure data of the first user are the secure data of the user profile of the first user, and said authentication data of the second user are the authentication data of the user profile of the second user.

3. The process of claim 2, in which each user profile comprises a heritage indicator initialized to a first value, the process comprising a step for changing the heritage indicator of the first user to a second value during access, by said at least one second user, to the secure data of the first user, said process further comprising a sending step of heir absence notification when, given the heritage indicator of said at least one second user the heritage rule of the first user cannot be satisfied.

4. The process of claim 1, wherein said authentication data of the first user and said authentication data of the second user comprise at least one biometric datum.

5. The process of claim 1, wherein said at least one management device for access is a portable terminal of the first user including a biometric data sensor.

6. The process of claim 1, comprising a notification-sending step to the first user during access of the second user to the secure data of the first user.

7. The process of claim 1, wherein said list stored in the secure data of the first user contains at least two second users, and at least two of said second users have rules for access defining different sets.

8. The process of claim 1, in which the accessing by the at least one second user, to the secure data of the first user, comprises management of reading/writing access.

9. The process of claim 6, in which each of the rules for giving access to the secure data of the first user defines a second set of data among the secure data of the first user to which the second user can have access in reading.

10. A device for managing access to secure data, comprising:

storage means for storing secure data associated with a first user and authentication data of said first user;

management means for accessing the secure data of the first user, as a function of the authentication data of this first user;

storage means for storing in association with the secure data of the first user:

- a heritage rule defining conditions for giving heirs of the first user access the secure data of the first user, a list of at least one second user designating the heirs of the first user, and

for each second user of said list, a rule for giving access to the secure data of the first user;

storage means for storing authenticating data for each second user of said list; and

management means for accessing, by said at least one second user, the secure data of the first user, as a function of the authentication data of the at least one second user and of the respective rule for giving access to the secure data of the first user based on a determination that the heritage rule is satisfied,

wherein:

said heritage rule is not satisfied when the elapsed period from the most recent access, by the first user, to the secure data of the first user is less than a predetermined period, and said heritage rule is able to be satisfied when said elapsed period is greater than said predetermined period, or

said rule heritage rule is not satisfied when an access number, by the first user, to the secure data of the first user during a predetermined period is greater than a predetermined threshold, and said heritage rule being satisfied when said access number is less than said predetermined threshold, or

said heritage rule is satisfied when at least two heritage requests have been received from two different second different users; and

wherein each of the rules for giving access to the secure data of the first user defines a set of secure data of the first user to which the second user can access in reading and/or writing.

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